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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/488,742	01/20/2000	Alexander Otto	0019696-0154	4848

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EXAMINER	
LEE, KYUNG S	

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/488,742	Applicant(s) OTTO ET AL.
	Examiner Richard K. Lee	Art Unit 2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 10-11, 18 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiga et al. (5,296,456).

Shiga et al. teaches an elongated current limiting composition, comprising:

an oxide superconducting member (fig. 4) 1; and

second electrically conductive member 2 is silver containing matrix (col. 3, line 4), substantially surrounding the superconducting member.

Regarding claim 3, the matrix further includes Sn, Zn or Cd (col. 3, line 7).

Regarding claims 4 and 5, the thermal stabilization layer 3 is soldered (col. 4, lines 51-58).

Regarding claim 10, Shiga et al. teaches a superconductor wire (title).

The claimed range of electric field and the range of operating current are inherent properties of the superconductor and the matrix composite disclosed by the current specification and Shiga et al. Further, selecting the critical current of the composite and the critical temperature of the superconductor for operation would also be inherent.

Regarding claim 11, having a heat capacity of the composite sufficient to prevent ... during a default event" would be inherent for proper device operation. Further, the recitation

that an element is "sufficient" to perform a given function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense.

Regarding claim 18, having sufficient heat dissipated from the composite ... to the operating temperature" would be inherent for proper device operation. Further, the recitation that an element is "sufficient" to perform a given function is not a positive limitation but only requires the ability to so perform.

Regarding claim 25, having a suitable heat capacity and heat dissipation for proper operation would be inherent.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6-9, 12-17, 19-24 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiga et al. in view of Fillunger et al. (4,079,187) and in further view of Puhn (4,994,633).

Shiga et al. teaches the claimed invention except for the thermal stabilization element comprising stainless steel.

Fillunger et al. teaches a superconductor (fig. 3) having a stainless steel thermal stabilization layer 12 (col. 3, line 50). Fillunger et al. disclosed that stainless steel layer provides support structure in addition to the thermal stabilization for the superconductor. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the

superconductive device of Shiga et al. with the stainless layer of Fillunger et al., since the stainless layer of Fillunger et al. would provide the superconductive device of Shiga et al. with support structure in addition to the thermal stabilization for the superconductor.

Regarding claims 7 and 9, Shiga et al. and Fillunger et al. disclose the claimed invention except for a bonding agent comprising of solder. Puhn teaches solder 44 as the bonding agent (fig. 3; see col. 3, line 50, and col. 5 lines 40-43) for the purpose of providing thermally and electrically conductive flow-able filler. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the superconductive device of Shiga et al. and Fillunger et al. with the bonding agent of Puhn, since the bonding agent of Puhn would provide the superconductor device of Shiga et al. and Fillunger et al. with thermally and electrically conductive flow-able bonding agent. In addition, Shiga et al. discloses soldering (col. 4, line 51-58).

Regarding claim 8, Shiga et al. teaches copper and titanium (Ti) stabilization layer 3 (col. 4, line 58). Regarding the Ti being at least 3 weight percent, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill the art. *In re Aller*, 105 USPQ 233. Further, 0 weight percent of silicon is disclosed.

Regarding claims 12-17, Shiga et al. teaches the claimed invention of a superconductor with copper based heat capacity material 3 (col. 4, line 58). Therefore, finding a heat capacity for suitable material using a derived formula would be obvious to one skilled in the art

Regarding claims 19-24, Shiga et al. teaches the claimed invention of a superconductor with copper based heat capacity material 3 (col. 4, line 58). Therefore, finding sufficient heat

dissipation for proper superconductor using a derived formula would be obvious to one skilled in the art.

Regarding claims 26-31, Shiga et al. teaches the claimed invention of a superconductor with copper based heat capacity material 3 (col. 4, line 58). Therefore, finding a heat capacity for suitable material and finding sufficient heat dissipation for proper superconductor would be obvious to one skilled in the art.

Regarding the claimed ranges for t, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill the art. *In re Aller,* 105 USPQ 233.

Response to Arguments

1. Applicant's arguments filed June 13, 2003 have been fully considered but they are not persuasive.

Examiner appreciates Applicant's understanding, since the Office Action mailed March 27,2003, included a typographical error. As assumed correctly, by the Applicant, the 103(a) rejection should have been based on Shiga et al. in view of Fillunger et al. and further in view of Puhn.

Applicant argues, "Shiga et al. provides no suggestion that the electric field can or should be controlled in the event of a current in excess of the critical current, or even any suggestion that a superconducting composite might experience a fault current." and "The Office Action provides no evidence that the recited fields would necessarily be achieved using the composites of Shiga et al." Examiner respectfully disagrees. Shiga et al. teaches an oxide superconducting member (fig. 4) 1, and a second electrically conductive member 2 of silver containing matrix

(col. 3, line 4), substantially surrounding the superconducting member. Shiga et al. clearly discloses Applicant's argued "parallel connection." Further, Shiga et al.'s resistivity overlaps the current invention. According to Applicant's specification (page 6, lines 22-29), "Oxide filament encased in a metal sheath... constituting a parallel circuit." A structure disclosed by Shiga et al. During abrupt current increase, the device's resistivity reaches 25 μΩ-Cm. Such resistively overlaps the present invention's resistivity of "about 5-25 μΩ-Cm." Therefore, to the examiner's understanding the Shiga et al. meets the claimed limitations of the current invention.

Applicant argues, "Because Shiga et al. suggests that a portion of the matrix should be composed of high-conductivity material, it is likely that the electrical field would not reach the minimum recited value of 0.05 V/cm." Claim 1, nonetheless, claims "about 0.05-0.5 V/cm." Since the resistivity of Shiga et al. overlaps the current invention Shiga et al would meet range of "about 0.05-0.5 V/cm." Regarding the "high-conductivity material" current invention is an open ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997).

Lastly, Applicant argues, "Both the stainless steel plate and the solder are disclosed to provide mechanical stabilization, rather than thermal stabilization." Examiner respectfully disagrees. Fillunger et al. hard solders his superconductive device to provide structural and thermal stabilization (see col. 1, lines 36-38 and col. 3, line 30). Puhn discloses thermally and electrically conductive filler (solder) surrounds the superconductor (see col. 3, line 50 and col. 5, line 40).

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard K. Lee whose telephone number is (703) 306-9060. The examiner can normally be reached on Mon. to Fri. 5:30AM to 2:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (703) 308-7619. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

KARL D. EASTHOM
PRIMARY EXAMINER

Richard K. Lee
Examiner
Art Unit 2832